

ABSTRACT OF THE DISCLOSURE

5 The purified nerve growth factor consisting of 116 amino acids from the venom of Naja kaouthia snake was fragmented by trypsin digestion. The fragments were isolated individually by high pressure liquid chromatography (HPLC). Thus separated fragments were tested for the biological activity of neurite growth on rat adrenal pheochromocytoma (PC12) cells. The fragment which showed the most activity was named ADESH. Subsequently, ADESH was sequenced. Synthetic ADESH was constructed using ten amino acids N L G E H P V C D S of the fragment from its N-terminal is designated as AD-10. Different versions of synthetic ADESH such as AD-15 and AD-5 consisting of 15 and 5 amino acids respectively were constructed; having the sequence: N L G E H P V C D S T D T W V for AD-15 and N L G E H for AD-5. The synthetic AD-15 and AD-5 mimic the biological activity of the natural NGF.

15 Synthetic ADESH is equally active as the fragment of the native NGF. Antibodies versus ADESH react with natural NGF having 116 amino acids. However, Anti-NGF reacts poorly with ADESH. This illustrates that the ten amino acids of ADESH are essentially important for the biological activity of neurite growth. Therefore, synthetic ADESH consisting of ten amino acids is a candidate for the treatment of neurological disorders instead of the entire NGF molecule. Synthetic ADESH can be immensely useful for treating neurological disorders such as Alzheimer's disease (AD) and Parkinson's disease (PD). ADESH being a small molecule will overcome the hindrance of blood-brain barrier and can be delivered by injection, as well as by nasal insufflation, buccal cavity, etc. It can be produced cheaply and abundantly with batch to batch reproducibility.